Claims

1. A shooting game machine, comprising:

display means for displaying images, including a mark;

reference displaying means for displaying a plurality of references that are arranged inside or around the display means at irregular intervals and are bases for detection of coordinates;

indication means for pointing at a point on the display mean, which is indicated by a player;

image detecting means mounted on the indication means to detect an image of a region indicated by the indication means;

reference coordinate detecting means for receiving the detected image and detecting coordinates of the references;

indicated coordinate detecting means for detecting indicated coordinates indicated by the indication means based upon the detected coordinates of the references; and

control means for adjusting a degree of difficulty based upon a distance between the display means and the indication means, receiving the detected indicated coordinates and controlling the entire shooting game machine.

2. The shooting game machine as set forth in claim 1, wherein the irregular intervals between the plurality of references are determined depending upon conditions of the shooting game machine, such as a resolution of the display means, a resolution, a visible range and a rotation limit of the image detecting means, and the distance between the display means and the indication means.

3. The shooting game machine as set forth in claim 1, wherein the reference coordinate detecting means detects actual information of the detected references based upon ratios of distances between the detected references if the image detecting means detects part of the references.

4. The shooting game machine as set forth in claim 1 or 3, wherein the indicated coordinate detecting means detects indicated coordinates based upon two of part of the references detected by the image detecting means.

5. The shooting game machine as set forth in claim 1, further comprising rotation detecting means for detecting rotation of the indication means based upon the plurality of references.

6. The shooting game machine as set forth in claim 5, wherein the control means controls the images displayed on the display means based upon a variation of the indicated coordinates detected by the indicated coordinate detecting means or the rotation detected by the rotation detecting means.

7. The shooting game machine as set forth in claim 1, further comprising a distance measuring means for detecting the distance between the display means and the indication means based upon previously stored intervals between the references on the display means and intervals between the references on the image detecting means, which are detected by the image detecting means.

8. The shooting game machine as set forth in claim 7, wherein the control means controls the images displayed on the display means based upon a variation of the indicated coordinates detected by the indicated coordinate detecting means or the distance between the display means and the indication means detected by the distance detecting means.

9. The shooting game machine as set forth in claim 1, wherein the control means controls the images displayed on the display means based upon a variation of the coordinates detected by the indicated coordinate detecting means.

10. The shooting game machine as set forth in claim 1, wherein the indication means is a model of one of a gun, a tennis racket, a baseball bat, a baton, a rod or a sword.

11. A shooting game method, comprising the steps of:

(a) displaying images, including a mark, by a display means and displaying a plurality of references that are bases for detection of coordinates;

(b) detecting a partial image of a certain region of a point indicated through an indication means manipulated by a player;

(c) receiving the detected partial image, detecting coordinates of the references, and setting coordinates of the references to the detected coordinates of the references;

(d) detecting indicated coordinates of the point indicated by the player based upon the coordinates of the references;

(e) measuring a distance D between the display means and the indication means based upon previously stored intervals between the plurality of references and distances between the coordinates of the references; and

(f) setting reference distances D_0 to some of distances D between the display means and the indication means falling within a certain range, and changing a degree of difficulty and situations of the game depending upon whether the reference distances are fulfilled.

12. The shooting game method as set forth in claim 11, wherein the distance D between the display means and the indication means is calculated by the following equation

$$D \fallingdotseq f(L/d)$$

where f denotes a focal length of a lens, L denotes a distance between the references obtained by previously stored coordinates of the references, and d denotes the intervals between the references on a CCD camera;

wherein the indication means is equipped at the front end thereof with the

lens and at the rear end thereof with the CCD camera.

13. The shooting game method as set forth in claim 11, wherein a directional angle δ_0 of the indicating means is increased if the distance D is shorter than the reference distance D_0, while the directional angle δ_0 of the indicating means is reduced if the distance D is greater than the reference distance D_0.

14. The shooting game method as set forth in claim 11, wherein a size of the mark is reduced if the distance D is shorter than the reference distance D_0, while the size of the mark is increased if the distance D is greater than the reference distance D_0.

15. The shooting game method as set forth in claim 11, wherein a penalty is granted to the player if the distance D is shorter than the reference distance D_0, while an advantage is granted to the player if the distance D is greater than the reference distance D_0.

16. The shooting game method as set forth in claim 15, wherein the penalty is granted to the player by a combination of a reduction in a moving speed of the player in the game, a limitation in a height of jumps and a reduction in-game time.

17. The shooting game method as set forth in claim 11, wherein situations of the game are set to be disadvantageous to the player if the distance D is shorter than the reference distance D_0, while the situations of the game are set to be advantageous to the player if the distance D is greater than the reference distance D_0.